

Claims

1. (Original) A method of generating a simulated microarray image, the method comprising:

receiving a plurality of simulation parameters; and

generating the simulated microarray image based at least on the simulation parameters.
2. (Original) A computer-readable medium comprising computer-executable instructions for performing the method of claim 1.
3. (Original) A method comprising:

generating a simulated microarray image based on simulation parameters, wherein the simulated microarray image is associated with known values; and

analyzing the simulated microarray image via a microarray imaging procedure, the analyzing comprising calculating observed values.
4. (Original) A computer-readable medium having computer-executable instructions for performing the method of claim 3.
5. (Original) The method of 3 further comprising:

comparing the known values with the observed values to benchmark the microarray imaging procedure.

6. (Original) The method of claim 7 further comprising:
generating a rating based on results of the comparing, wherein the rating indicates effectiveness of the microarray imaging procedure.

7. (Original) The method of claim 3 wherein the values comprise spot intensity values.

8. (Original) The method of claim 3 wherein the generating comprises simulating a fluorescent background level for the simulated microarray image.

9. (Original) The method of claim 3 wherein the generating comprises simulating spots for the simulated microarray image.

10. (Original) The method of claim 3 wherein the generating comprises simulating post-processing phenomena for the simulated microarray image.

11. **(Currently Amended)** A method for simulating a microarray,
comprising:
defining a plurality of parameters;

generating a simulated microarray according to the parameters using an imaging procedure;

comparing the simulated microarray to a known value; and

evaluating the imaging procedure in response to the comparison.

12. (Original) A computer-readable medium having computer-executable instructions for performing the method of claim 11.

13. (New) A computer-implemented method of generating a simulated microarray image, the method comprising:

receiving a plurality of simulation parameters; and

generating the simulated microarray image based at least on the simulation parameters.

14. (New) A computer-readable medium comprising computer-executable instructions for performing the method of claim 13.

15. (New) The computer-implemented method of claim 13 wherein the simulated microarray image is associated with known values, the method further comprising:

analyzing the simulated microarray image via a microarray imaging procedure, the analyzing comprising calculating observed values; and

comparing the known values with the observed values to benchmark the microarray imaging procedure.

16. (New) The computer-implemented method of claim 15 wherein:
the known values comprise signal intensities;
the observed values comprise signal intensities; and
the comparing compares the signal intensities of the known values with the signal intensities of the observed values.

17. (New) The computer-implemented method of claim 13 wherein the simulated microarray image simulates random perturbations in array preparation, printing, and scanning.

18. (New) The computer-implemented method of claim 13 wherein the simulated microarray image simulates background noise.

19. (New) The computer-implemented method of claim 13 wherein the simulated microarray image simulates radius variation of cDNA deposition spots.

20. (New) The computer-implemented method of claim 13 wherein the simulated microarray image simulates spot drift of cDNA deposition spots.

21. (New) The computer-implemented method of claim 13 wherein the simulated microarray image simulates center core variation of cDNA deposition spots.

22. (New) The computer-implemented method of claim 13 wherein the simulated microarray image simulates chord removal of cDNA deposition spots.

23. (New) The computer-implemented method of claim 13 wherein the simulated microarray image simulates edge noise of cDNA deposition spots.

24. (New) The computer-implemented method of claim 13 wherein the simulated microarray image simulates edge enhancement of cDNA deposition spots.

25. (New) The computer-implemented method of claim 13 wherein the simulated microarray image simulates signal intensity.

26. (New) The computer-implemented method of claim 13 wherein the simulated microarray image simulates channel conditioning.

27. (New) The computer-implemented method of claim 13 wherein the simulated microarray image simulates spike noise.

28. (New) The computer-implemented method of claim 13 wherein the simulated microarray image simulates scratch noise.
29. (New) The computer-implemented method of claim 13 wherein the simulated microarray image simulates snake noise.
30. (New) The computer-implemented method of claim 13 wherein the simulated microarray image simulates smoothing.
31. (New) The computer-implemented method of claim 13 wherein the generating comprises randomization at a spot level of the simulated microarray image.
32. (New) The computer-implemented method of claim 13 wherein the generating comprises randomization at a block level of the simulated microarray image.
33. (New) The computer-implemented method of claim 13 wherein the generating comprises randomization at an array level of the simulated microarray image.
34. (New) A software system for generating a simulated microarray image, the system comprising:
simulation parameters; and

a simulated microarray image generator operable to generate a simulated microarray image based at least on the simulation parameters.

35. (New) A software system for generating a simulated microarray image, the system comprising:

means for storing simulation parameters; and

means for generating a simulated microarray image based at least on the simulation parameters.